

Michael Stephen Saxon

EDUCATION	Arizona State University Tempe, AZ M.S., Computer Engineering: 3.94/4.0 <i>Aug 2018 - Present</i> Thesis topic —Representation learning for data-scarce dysarthric speech applications Advisors: Visar Berisha, Ph.D. & Sethuraman Panchanathan, Ph.D.
	Arizona State University Tempe, AZ B.S.E., Electrical Engineering; Minor, Mathematics: 3.60/4.0 <i>Aug 2014 - Aug 2018</i> Honors Thesis —Using Goodness of Pronunciation Features for Spoken Nasality Prediction Advisor: Visar Berisha, Ph.D.
RESEARCH INTERESTS	Natural language understanding; speech processing, synthesis, and recognition; representation learning; semi-supervised learning; assistive technologies; semantic data mining; AI governance
PUBLICATIONS	<p>M. Saxon, J. Liss, V. Berisha, “A new model for objective estimation of hypernasality from dysarthric speech,” Workshop on Signal Analytics for Motor Speech (SAMS), Motor Speech Conference 2020, Santa Barbara, CA, February 2020. (<i>Accepted</i>)</p> <p>M. Moore, M. Saxon, H. Venkateswara, V. Berisha, S. Panchanathan, “Say what? A dataset for exploring the error patterns that two ASR engines make,” Interspeech 2019, Graz, AT, 2019, pp. 2528-2532.</p> <p>M. Saxon, J. Liss, V. Berisha, “Objective Measures of Plosive Nasalization in Hypernasal Speech,” 2019 IEEE International Conference on Acoustics, Speech, and Signal Processing, Brighton, UK, 2019, pp. 6520-6524.</p> <p>M. Saxon, S. Bhandari, L. Ruskin, G. Honda, “Word Pair Convolutional Model for Happy Moment Classification,” 2nd Workshop on Affective Content Analysis, AAAI 2019, Honolulu, HI, 2019, pp. 111-119.</p> <p>B. Gupta, M. Saxon, T. McDaniel, S. Panchanathan, “Chat-Box: Proposing a Mood Analyzer for Individuals with Social Interaction Disabilities,” International Conference on Human-Computer Interaction, Las Vegas, NV, 2018, pp. 394-401.</p> <p>T. Houghton, M. Saxon, Z. Song, H. Nyugen, H. Jiang and H. Yu, “2D Grating Pitch Mapping of a through Silicon Via (TSV) and Solder Ball Interconnect Region Using Laser Diffraction” 2016 IEEE 66th Electronic Components and Technology Conference (ECTC), Las Vegas, NV, 2016, pp. 2222-2227.</p>
PREPRINTS	M. Saxon , A. Tripathi, Y. Jiao, J. Liss, V. Berisha, “Robust Estimation of Hypernasality in Dysarthria,” (<i>Under Review, IEEE Trans. on Audio, Speech, and Language Processing</i>) arXiv:1911.11360
EMPLOYMENT SUMMARY	<p>Applied Science Intern, (Alexa Hybrid Science) Amazon Pittsburgh, PA <i>May 2019 - Aug 2019</i> Oversaw a research project integrating neural end-to-end spoken language understanding for intent classification for Alexa. Experimented with developing novel semi-supervised label projection methods to generate sequential labels from full-sequence class labels. Developed architectures for “semantic endpointing,” stopping the forward pass once enough information has been heard.</p> <p>Research Engineer Intern Aural Analytics Scottsdale, AZ <i>Dec 2018 - Apr 2019</i></p>

Integrated cloud-based ASR and developed in-house ASR models for integration in a clinical speech assessment product. Explored the design of deployable ASR systems robust to quality reduction under dysarthria.

Graduate Research Assistant

Tempe, AZ

Arizona State University

Aug 2018 - Present

Joint funding from PIs Berisha and Panchanathan (See Publications)

REU Participant

Tempe, AZ

NSF EV-STs @ Arizona State University

Oct 2017 - May 2018

NSF Center for Efficient Vehicles and Sustainable Transportation Systems: Created data acquisition code for synchronous collection of LiDAR and camera image data in C++ with a corresponding video reconstruction code for part of my Senior Design project. Assisting in the development of neural network architectures for processing LiDAR data, evaluation methodologies, and principled pre-processing for LiDAR input to neural networks.

Embedded Software Engineering Intern

Scottsdale, AZ

General Dynamics Mission Systems

May 2017 - Jul 2017

Software-level testing for an FQT release of the HOOK3 Combat Survival Radio; Preparing reports on problems detected during testing and closing PRs; Working on an Agile development team

Undergraduate Researcher

Tempe, AZ

The Luminosity Lab @ Arizona State University

Aug 2016 - May 2018

Developing software for networked embedded systems; Writing pathfinding algorithms for autonomous drones in Python; Utilizing machine learning to build data analysis models; AI/ML Working Group Member

Tutor

Tempe, AZ

Engineering Tutoring Center @ Arizona State University

Sep 2015 - Sep 2016

Working in the Engineering Tutoring Center; Explaining concepts for freshman and sophomore level math, science, and electrical engineering classes to students who need help; Answering questions and giving homework help

**RESEARCH
EXCHANGE**

Hiroshima University

May 2018 - Jul 2018

Pose estimation models for Affective Computing with Dr. Toru Tamaki's group, funding provided by Center for Cognitive Ubiquitous Computing.

SKILLS

Software Proficiencies—Python (Pytorch, Numpy, SciPy, Tensorflow, AllenNLP), BASH, C/C++, OpenCV, Kaldi, MATLAB, Linux, Verilog

Conceptual—Computational linguistics, DSP, embedded programming, sensor fusion, FPGA development, deep learning, multimedia processing

**SELECTED
COURSEWORK**

Fundamentals of Statistical Learning—Multimedia Deep Learning—Information Theory—Random Signal Theory—Digital Image/Video Processing and Compression—Speech and Audio Processing and Perception—Syntax—Semantics—Numerical Computing—Foundations of Algorithms

SCHOLARSHIPS

ASU Presidential Scholarship - Full Tuition; ASU SMECA (Science, Math, and Engineering Competition Award) - \$20,000; Texas Instruments Scholar Award - \$2,750; W.L. Gore Undergraduate Scholarship - \$3,000; Westwood High School Outstanding Graduate - \$3,000